# Glaciers and Glaciation

What causes glaciers to form?

What shape classifications can be made of glaciers?

What temperature classifications can be made of glaciers?

Name some viscous behaviors of glacial ice

Name some plastic behaviors of glacial ice

What section of the glacier moves fastest, and which mores slowest?

Where is pressure the highest in a glacier?

Explain how a glacier erodes the land it flows over.

Know where a glacier would pluck rocks from as it flows over a hill.

What shaped valleys do glaciers make?

Understand how Moraines are made (lateral moraines, median moraines, and terminal moraines)

How is a kettle made?

Understand how ice wedging creates the permafrost texture

What are Striations?

What is Cirque?

What is an Arete?

What is a horn? (And not the kind found on trunkins)

What is a Fjord?

What is a Moraine?

What is a glacial Erratic/Dropstone?

What is a kettle?

# Streams and floods, the geology of running water

Terms

What is runoff?

What is sheetwater?

What is a Stream?

What is a Permanent stream, vs. a Emphemeral stream?

What is a Channel?

What is a headwater?

What is a mouth (geologically?)

What is a flood?

What is a drainage basins?

What splits apart drainage basins?

What is a drainage network?

Explain downcutting

Explain headward erosion

What are tributaries?

What is laminar flow?

What is turbulent flow?

Concepts:

Which way does runoff flow?

How much water is not salty?

Where is the majority of this non salty water?

Understand how water flows down hills, and what creates a drainage basin

Explain “base level” and “local base level”

Understand how geology (joints, mountains, soft rocks, and harder rocks) would influence the resulting streams on top of them.

Understand how the gradient (how steep the mountain side is) will influence the stream that will form.

Understand the role of a river in the production of sediment, and the deposition of this sediment.

Where is the fastest part in a river and why?

As a river bends, where will it deposit sediment, and where will it erode it?

Explain the difference between dissolved ions in water, suspended load, and bed load.

Explain competence and capacity in terms of the sediment a stream can transport.

What causes braided streams?

Which areas flood during floods?

# Oceans and coastlines

Where did the ocean waters come from? (name TWO places)

What elements make our ocean salty? (there are 8 main ions, be sure to know at least 5)

What controls the movement of the ocean currents?

Where is most of the life in the ocean?

How do we define a beach?

Know the beach terms: coast, offshore, near shore, shore, breakers, tides, longshore drift,

Do vampirapods prefer high or low tide for playing beach ball?

Understand how the geology and topography along a cost influences the coastal environment.

What is a tide? And what causes tides?

Why is there an antipodal tide, behind Earth?

Where do tides occur?

What causes a erosional vs. depositional shoreline?

Explain how costal cliff erosion happens and where the majority of wave driven erosion happens.

What is a wave-cut platform?

Explain longshore drift, and sediment transport along coasts.

What is an estuary?

What is a Fjord? (Yea you should know this from a previous chapter already!)

Know of some other types of coastlines we did not cover in great detail: Mangrove swamps, marshes, coral reefs.

Understand a few methods used to prevent beach loss.

# Global Change

Give an example of solid earth evolution?

Give an example of atmospheric or ocean evolution?

Give an example of biological evolution?

Explain how each of the above influences the other two (solid earth, atmosphere/hydrosphere and life)

How is sea level measured?

What problems can cause changes in sea level measurements?

Explain Isostatic vs Eustatic sea level changes.

What methods do we have that allow us to understand climate though history? Name 4 different examples.

Understand how stable oxygen isotopes in shells can be used to estimate temperature.

What correlations are known about temperature, CO2 and Dust?

What is a Milankovich cycle?

How would movement of the continents influence climate change?

If the climate changes too much, will all life die off on Earth?

# Groundwater

What is infiltration?

Understand capillary action.

What is a pore and porosity?

What is permeability?

What is a aquifer?

What is an aquitard?

Explain how an aquifer can be unconfined and confined.

Explain how caves and karst topography can be formed.

Explain where mechanical and chemical weathering occur related to groundwater.

What is a soda straw? And why do they form?

How do sinkholes form?

How can you estimate groundwater flow?

What controls this flow?

Why does groundwater flow slowly?

What is drawdown?

What is an artesian well? And why is it important to pay extra money for artesian water?

Where do springs form?

What causes groundwater depletion?

What causes salt water intrusion?

How do pollutants flow through an aquifer

# Earth surface processes and mass movement

What is geomorphology?

What drives mass movement?

How old are most features on the Earth?

What makes the majority of these features young?

Where is tectonic activity found?

What tectonic activity is worrisome to humans and where?

What is Creep?

What is Slumping?

What is a debris flow?

What is a rockfall or avalanche?

Know the relative speed of these features, and what defines each of them.

Know the role of a failure (slip) surface.

How would above ground landslides be different or the same relative to underwater landslides?

What can we do to stop landslides?

What dangers do volcanoes present?

Know what a Lahar is.

Which wave is faster, S or P?

What is liquefaction?

How are earthquakes and tsunamis related?

How do we estimate where the next earthquake might occur?

# Economic Geology

What sources of energy make no emissions?

How is oil formed?

What types of oil/petroleum can we mine?

What makes each type different?

Geologically, what is necessary for oil production?

What is EOR, and give an example?

How are blowouts caused?

Where does coal come from?

What is eliminating coal mining jobs?

What changes do dams cause?

What metals do we need?

What are REEs?

What is a challenge of modern materials mining?

How does gold get into the gold vein?

How does pyrite cause acid mine drainage?